

ABSTRACT

A positive electrode active material for a lithium secondary battery containing a lithium-cobalt composite oxide, which has a large volume capacity density, has a high safety and is excellent in charge and discharge cyclic durability, and its production process, are provided.

A lithium-cobalt composite oxide represented by the formula $\text{Li}_p\text{Co}_x\text{M}_y\text{O}_z\text{F}_a$ (wherein M is a transition metal element other than Co or an alkaline earth metal element, $0.9 \leq p \leq 1.1$, $0.980 \leq x \leq 1.000$, $0 \leq y \leq 0.02$, $1.9 \leq z \leq 2.1$, $x+y=1$ and $0 \leq a \leq 0.02$) and comprising a mixture containing substantially spherical hard first particles of lithium-cobalt composite oxide having such a sharp particle size distribution that the volume basis cumulative size D10 is at least 50% of the average particle size D50, and the volume basis cumulative size D90 is at most 150% of the average particle size D50, and second particles of lithium-cobalt composite oxide filling the space among the first particles, in a mass ratio of first particles/second particles of from 1/2 to 9/1, and process for producing the same.